Date=18/08/2020
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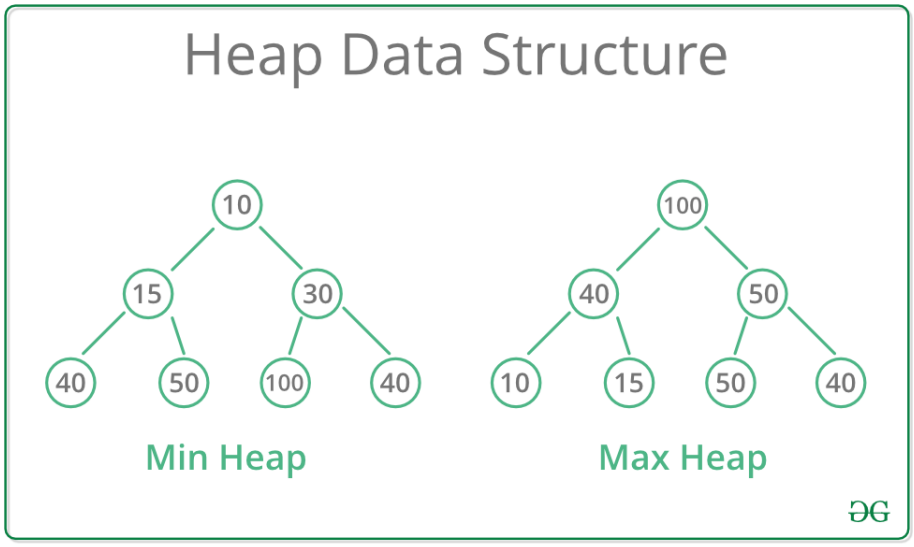
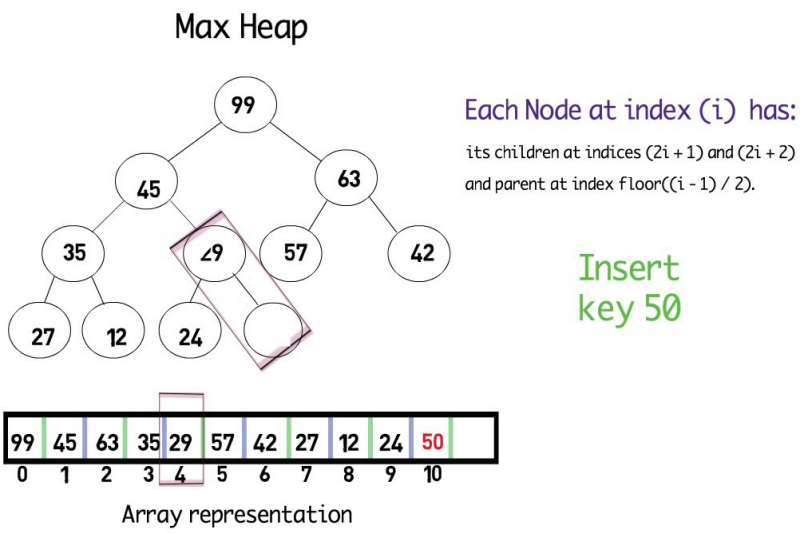
Subject ⇒Heaps In Python

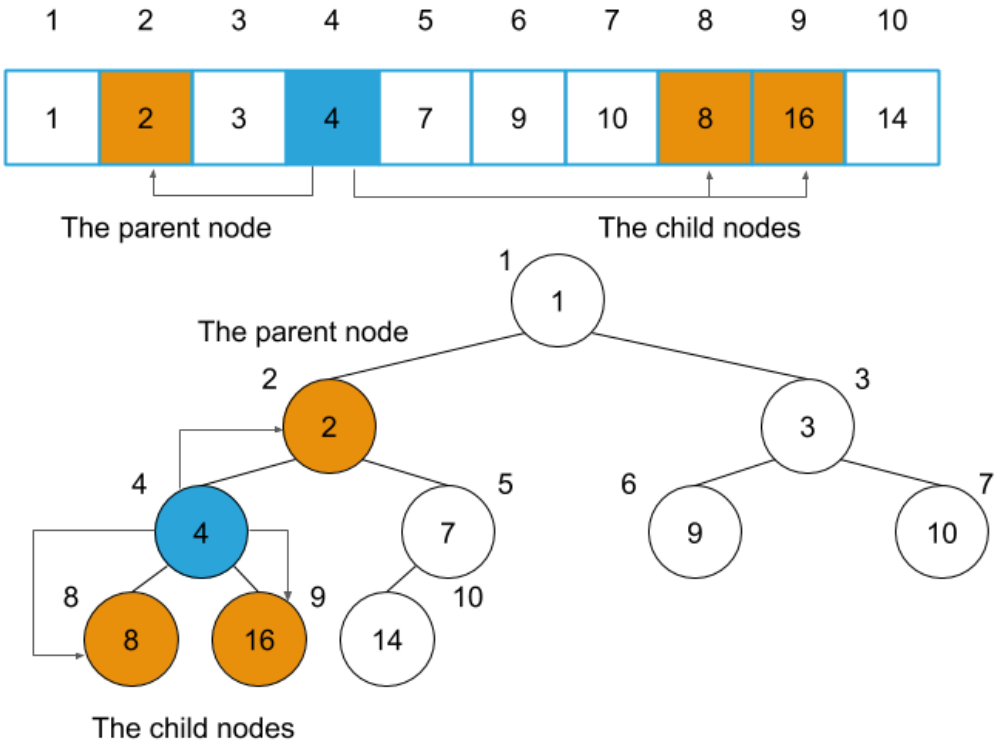
IN PREVIOUS LECTURE **(QUICK RECAP) Date-17/08/2020**	**In Today's Lecture (Overview)**
⇒ Binary search Tree in python ⇒ Python program to demonstrate insert operation in binary search tree ⇒ What is a balanced binary tree?? ⇒ MCQs Questions For Self Practice // CC And Assignment For The da	⇒ Heaps in Python ⇒ MCQS ⇒ Questions for self Practice // CC for the day

⇒ Heaps in Python

Heap is a special tree structure in which each parent node is less than or equal to its child node.Then it is called a Min Heap
If each parent node is greater than or equal to its child node then it is called a max heap.
It is very useful for implementing priority queues where the queue item with higher weightage is given more priority in processing.




Max Heap
99
45
63
35
29
57
42
27
12
24
Each Node at index (i) has:
its children at indices (2i + 1) and (2i + 2)
and parent at index floor((i - 1) / 2).
Insert
key 50
99 45 63 35 29 57 42 27 12 24 50
0 1 2 3 4 5 6 7 8 9 10
Array representation


1 2 3 4 5 6 7 8 9 10
1 2 3 4 7 9 10 8 16 14
The parent node
The child nodes
1
1
The parent node
2
2
3
3
4
4
5
7
6
9
7
10
8
8
16
9
14
10
The child nodes

⇒ MCQS

1.The left node value of a heap with root as 1 is denoted by ?

A=2 * i

B=2 * i + 1

C=3 * i

D=3 * i + 1

2.**which is not a property of heap ?**

A=Its will have 4 ^ n + 1 nodes

B=it can be a complete binary tree

C=it can be a full binary tree

3.**How can you find the parent of a node i in heap ?**

A=i//2

B=i//2 - 1

C=i//+1

D=(i + 1)//2

4.**What is the time complexity for building the heap with n nodes?**

A=O(n)

B=O(nlogn)

⇒ Questions for self Practice // CC for the day

Q1. https://leetcode.com/problems/two-sum/
Q2. https://leetcode.com/problems/path-sum/